Nevada Board of Dispensing Opticians
2016 Optical Examination

General Information

The April 2, 2016 Nevada optical examination will be held at the College of Southern Nevada, 6375 W. Charleston Blvd. in Las Vegas.

Please plan to arrive at least 15 minutes early so a proctor may direct you to an exam room and you have time to get settled. The examination will be from 8:00 a.m. until 6:00 p.m. Please bring your lunch with you, as you will have only 30 minutes to eat.

Important note: You must show a government-issued photo ID such as a driver's license or passport before you will be allowed to take the exam.

The examination will consist of the following sections: 1) mechanical optics and dispensing theory, 2) geometrical optics and mathematical applications, 3) ophthalmic law and application, 4) ocular anatomy and physiology, 5) practical dispensing of spectacles/contacts, 6) contact lens fitting and filling, and 7) lens identification.

What to Bring to the Exam

The following will not be supplied; applicants must bring these items to the examination:

- PD ruler
- Pal layout charts
- A *non-programmable* scientific calculator
- Vis a vis pens
- #2 pencil
- Lunch

The following will be supplied, but if applicants wish, they may bring these items to the examination:

- Base curve clock
- Lens caliper
- Magnifying loop
- V gauge
- Contact lens thickness gauge

Examination Percentages

Area	Weight	Type	# of questions	Time
1. Neutralization (spectacles & contacts)	30%	practical	112	1 hour 15 min
2. Optical Theory	15%	written	64	1 hour 30 min
3. Dispensing	10%	written	64	1 hour 30 min
4. Nevada Law	15%	written	48	30 min
5. Anatomy-Physiology/Slides	15%	written	82	1 hour 15 min
6. Lens ID	5%	practical	75	30 min
7. Instrumentation	10%	practical	37	45 min

Suggested Study Areas

Mechanical Optics
1. Slab-off grindings
2. Lensometer readings
3. Oblique powers
4. Box measurements
5. Lens styles
6. Rx transpositions
7. Sagital depth
9. Lens treatment
10. Terminology
11. Dioptic curves
    a. convex
    b. concave
12. Focal length
13, X,Y,Z axis
14. Image jump-calculations
15. Telescope
16. Abbreations

Ophthalmic Optics
1. Magnifications
2. Induced prism & prismatic effect
3. Focal length
4. Lens-styles & characteristics
5. Prism
6. Visual errors-descriptions
7. History of spectacles
8. Angle of resolution
9. Lensometer readings
10. Lens clock use
11. Minimal blank size
12. ANSI standards
13. Oblique prism formula
14. Amplitude of Accommodations
15. Cataract treatments
16. Prefix definitions
17. Prentice Rule
18. Snellens Chart

Dispensing Procedures
1. Minimum blank size
2. Instruments
3. Eyeglass fittings-cause and effect
4. Frame materials – metal Zyl
5. Frames out of alignment terminology
6. Lens color

Math
1. Prism
2. Decentration
3. Vertex formula
    a. compensation
    b. effective
4. Slab-off
5. Sagital depths
6. Magnification formulas
7. Accommodative amplitude

Anatomy
1. Terms for components of the eye
2. Components of the eye
    a. their functions
    b. component characteristics

Law – Statutes and Regulations
1. Board members
    a. appointments
    b. qualifications
2. Qualifications for licensing
3. Responsibilities of licensed opticians
4. Disciplinary action by the Board

Natures and Properties of Light
1. Terms & descriptions of light
2. Wave lengths
3. Light characteristics
4. Index of refraction formula
5. Focal length formula

Textbook References

The following reference texts are available in the Clark County Library-Health Science Section, of the West Charleston campus of the College of Southern Nevada, and in the Truckee Meadows Community College Library Reference Section (Ophthalmic).

1. Clinical Anatomy of the Visual System – Lea Ann Remington
2. Optical Formulas – A Tutorial – 2nd Edition – Ellen Stoner & Patricia Perkins
3. System for Ophthalmic Dispensing – 2nd Edition, Brooks & Borish
4. Physics—Cliff Notes Version
5. Studies in Optics – A. A. Michelson
6. Applied Optics & Optical Design – A. E. Conrady
7. Introduction to Ophthalmic Optics – SOLA Optical Publication – Dr. James Sheedy & Darryl Meister
8. Physics for Scientists and Engineers – 5th Edition, Chapters 35-39-Seerway & Beichner
9. Light – R. W. Ditchburn
10. Optics, the Science of Vision – Vasco Ronchi
11. Optics & the Theory of Electrons – Wolfgang Pauli
12. Clinical Pearls in Refractive Care – D. Leonard Werner & Leonard J. Press
13. Primary Care Optometry – 4th Edition – Theodore Grosvenor
14. Diagnosing & Treating Computer Related Vision Problems – Sheedy, Shaw & McMinn
15. The Complete Book of Holograms – Joseph Kasper & Steven Feller
16. Optics & Optical Instruments – B. K. Johnson
17. Introduction to Light, The Physics of Light, Vision & Color – Gary Waldman
18. Dispensing Pediatric Eyewear-Kathryn Schramm
19. Introduction to the Optics of the Eye – David Gross & Roger West
20. Practical Aspects of Ophthalmic Optics – 4th Edition - Margaret Dowaliby
21. Fine Art of Prescribing Glasses Without Making a Spectacle of Yourself – Milder & Rubin

Contact Lens Study Areas

1. All aspects of keratometer, knowing how to take K readings
2. Neutralizing hard and gas permeable lenses
3. Understanding the concepts and use of the radioscope
4. Purposes of the slit-lamp, understanding the concepts of the variety of illuminations
5. Anatomy and physiology of the eye
6. Identification of fluorescene patterns with rigid lens
7. Understanding lens materials and their uses
8. Identification of lens parameters to be used with different prescriptions
9. Identifying and understanding "with the rule" and "against the rule"
10. Identifying and understanding keratoconus
11. Lens designs and their applications
12. Identifying and treating progressive myopia
13. Over-refraction of the trial lens
14. Refitting of hydrogel and PMMA wearers
15. Nevada law
16. Identifying basic contact lens symptoms
17. Understanding a dry eye in relation to contact lenses
18. Be able to identify all staining patterns and how each relate to contact lens fitting
19. Computing vertex distance
20. Transposing diopters to millimeters

Contact Lens References

1. Contact Lens Practice
Robert B. Mandell, O.D., PhD
Charles c. Thomas, Publisher

2. General Ophthalmology
D. Vaughan, M.D., T. Asbury, M.D.
Lange Medical Publications

3. Biomicroscopy
University of Pacific School of Optometry
Portland, Oregon

4. A Step-by-Step Approach to Fitting Contact Lenses for Keratoconus
Patrick J. Caroline
University of Southern California
Estelle Doheny Eye Foundation, Los Angeles, CA

5. Coast Vision Newsletter
Consultants Corner
Coast Vision
18368 Enterprise Lane
Huntington Beach, CA 92648

6. Multi-Focal Contact Lenses
Ronald M. Akashi, M.D., Clinical Professor
USC/SMO Doheny Eye Institute
Source: CLAO

7. Tears and Contact Lenses
Ronald H. Akashi, M.D., Clinical Professor
USC/SMO Doheny Eye Institute
S. Howard, PhD., Neuropharmacology, Associate Professor UCLA/SM
Source: CLAO

8. RGP Lens Institute Symposium
CLMA/RGPLI Video Library
CLMA 2000 M St., N. W.
Washington, D.C. 20036